**IT Applications Unit 3**

**Ch 1 Problem Solving**

**The problem-Solving Methodology and Project Management, p 20-31**

An information problem arises when an organisation’s goals are not being met.

To solve problems a planned strategy is used a problem-solving methodology which is a structured approach to creating a solution that uses a specified procedure or series of steps to follow.

There are seven steps:

* **Analyse the problem**
* **Design the solution**
* **Develop the solution**
* **Test the solution**
* Documentation to support the solution
* **Implement the solution**
* **Evaluate the solution**

Key Word: **ADDTDIE**

**Note:** The stage of documentation is not covered in this area of study.

**Analyse the problem**

In analysing the problem there are a number of steps to be undertaken.

* **Define the problem**- clearly state what the problem is. Their needs to be a question that can be followed in the other steps of analysing.
* **Investigate the problem**- Think about what the users need and what would fix the problem. It provides a direction in which we should be heading. One way of investigating the problem is to interview people to determine their views and needs. The information that is gathered should provide details of the causes of the problem, the constraints on the current practises and suggestions for possible solutions.
* **Determining what information is required**- This is when the information that needs to be produced in the solution. Examples of information that you might need are summary reports and letters that respond to specific queries.
* **Determine the data requirements**- This involves identifying the data that needs to used to produce the output. Much of this data is likely to already exist within the organisation. This can also be changed at a later stage. The data needs to be examined and checked for reliability, suitability and freedom of bias.
* **Consider the format of possible solutions**- Weather the format is a letter, website or media presentation on a CD. It needs to be considered which format would be the best and take the least amount of time. It also needs to be considered weather you need to reduce paper cost like a website would. This would also allow people around the world to access it.
* **Determine the preferred solution-** Work out the solution that is most likely to enable an organisation to complete its goals. It is important to consider the price of producing the solution and its ongoing maintenance expenses.
* **Present a project brief to management for approval-** This is once everyone has agreed to the preferred solution. The proposal should also include estimated costs, identification of design and recommended timeline for the production. Once this step is agreed to proceed to the next step: the design of the solution.

**Define the problem: Think about it, 1.13**

**Problem 1:** An office supply company is not receiving orders from potential customers living outside the potential customers living outside the metropolitan area.

Why doesn’t the office supply company make a website so that people living outside the metropolitan area can make orders over the website?

**Problem 2:** The local sports store is getting a lot of returned mail when it posts direct sales material to customers.

Could there be an internet site set up so that customers could make an order of what they need each time the mail gets sent to them?

**Problem 3:** A school principal makes a presentation to an audience of parents using overhead transparent that feature a large volume of text and no graphics. After a few minutes, it becomes apparent that the interest of parents has waned.

Could the school put some pictures onto the overheads so that the information will then become more interesting to the parents? Also some text could be taken off the overheads so the parents and doing more listening than reading.

**Designing the solution**

In designing the solution there are several steps that need to be followed. Elaborate briefly or list the key points under each of the following steps:

* **Identifying the data required-**Data can include both text and graphics such as descriptions of goods and services and photographs of goods.
* **Choosing an appropriate software solution-** The software that is chosen is influenced by the nature of the problem and the solution needed. Example if you are making detailed reports you might choose to use the software Filemaker Pro.
* **Processing the data-**
* **Macro design-** This enables people to see the ‘bigger picture’ these strategies include flow charts, diagrams and IPO charts. Once this has been done the overall design has been determined, and the finer details can be considered.

The role of the flow charts are to indicate the essential procedures that are to be employed to create the solution and to generate the required output. A flow chart uses symbols to show the input and processing data. The flow chart should indicate some detail of the procedures to follow.

An IPO chart is also called defining diagram, which identifies the programs inputs, its outputs and the processing steps required to transform the inputs into the outputs.

* **Choosing layout designs-** This is a visual display of how the final product should look If using a website a storyboard is used to show what the site will look like and the elements that will be included. A layout diagram is normally hand drawn. They show the placement of text and graphics.
* **Choosing test data-** This is done to ensure the product is free of errors and is done through the development and use of test data and dummy data. A test table is used to document the tests to be preformed. Actual testing takes place after the solution has been developed.
* **Choosing conventions and applying formats-** A **format** means to create and/or change the appearance of a document by altering fonts, colours, spacing and page numbers ect. Formatting looks at the presentation of the layout and the suitability.

**Conventions** are simple formal ways of displaying information. They are rules that people follow. An example is the way that a letter is addressed.

* **Text conventions-** These are rules that apply to text generated on the computer. These include paragraphs and spacing. Numbers between 1 and 9 are normally written in words. Fonts and styles are also used consistently.
* **Numerical information-** whole number should not have decimal points, a dash is used in a cell to represent the non-entry of data.
* **Dates and times-** In Australia dates are written as day, month, year and time is represented in 24-hour or 12-hour time followed by a.m. or p.m.
* **Graphs-** Graphs should include title, legend or key and axes to show the appropriate units of measure.
* **Reports-** All reports should include title, name of the person who prepared the report, the date the report was prepared and page numbers where necessary.

**Project Management Plan**

Project management involves planning, coordinating and controlling the development of a solution to an information problem.

**The roles of a project manager:**

* Updating a computer network
* Development of a company website
* Launch of a new product
* Release of monthly newsletter
* Relocation of company headquarters

The project manager breaks a project into tasks. A task is a something that has to be completed in the project. Each task has a starting a finishing point, this define the time in which it has to be done. Tasks should be relatively short and manageable.

A resource is something that is needed in every task and is something that makes the work happen. An example would be equipment or human resource.

A milestone is a task that is important to finish. They indicate the conclusion of an important stage of the project, such as the conclusion of staff training.

The project manager has regular team meetings to establish weather milestones have been met, identify what team members are currently working on and revise deadlines if necessary. Also any problems need to be dealt with.

**GANTT Charts**

A Gantt Chart is a visual tool that represents the schedule of a project. It looks similar to a bar graph, where each bar represents a task, the longer the bar, the longer the task. When a bar is on top of another that means the two tasks can be completed at the same time. A **predecessor** is a task that must be completed prior to the specified task.

**PERT charts**

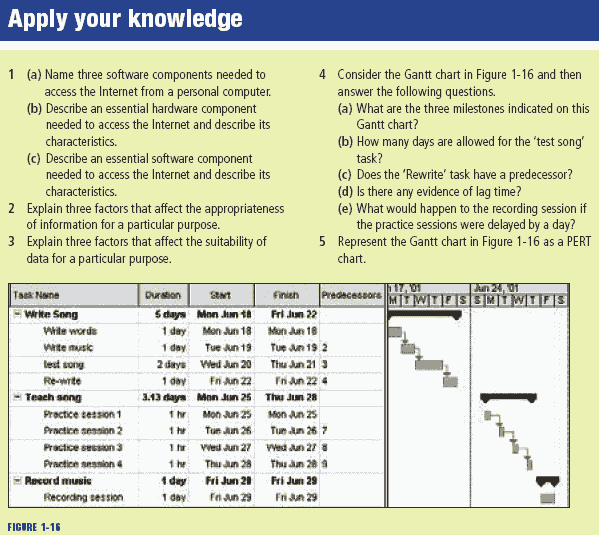
A PERT chart represents each project task in order of dependencies. Each task or set of tasks is make up an event that is represented by an arrow and the completion of an event is represented by a circle. PERT charts allow the identification of a **critical path**. The critical path is the line that runs from the beginning of the project, through a sequence of events and concludes at the completion of the final event. Each event on the critical path is dependent on the task before.

The difference between a Gantt chart and a PERT diagram are that the Gantt chart shows the schedule of the project that is easy to see and the PERT chart shows the set of tasks and the slack time that is given.

**Lead time and lag time**

Lead time is the time leading up to or before the task. This is the time where the predecessors to the task take place. The **lag time (slack time)** relates to the amount of time there is between tasks. It is the amount of time there is in which the event can run over time without delaying the project.

Project managers rely on lag time when tasks run over time. Lag time is often planned for so that the critical path is not affected.



1. A) The three software components needed to access the Internet from a personal computer are

* Internet explorer

B) The hardware component needed to access the internet is a modem which is used to connect to the internet and only allows the computers you allow to use it connect to it.

1. Three factors that affect the appropriateness of information for a particular purpose are that it is current and the information needs to be relevant to its purpose. The information also needs to be in a suitable format, useable by its audience.
2. The three factors that affect the suitability of data for a particular purpose are that the data entered is consistent through out. All the dates must be in the same format for example 1/3/09.
3. A) The three milestones indicated on this chart are writing the song, teaching the song and recording music.

B) There has been 2 days left for testing the song.

C) The rewrite task has 4 predecessors which means that all tasks before that have to be done before it can start,

D) There is evidence of lag time that could be used like on weekends.

E) If the practise sessions were delayed by a day then the recording of the music would be delayed as well because they need to be fully practised to record.